SCHENECTADY SCHOOL DISTRICT
108 Education Drive
Schenectady, NY 12303

April 16, 2007

Marlene H. Dortch, Secretary
Federal Communications Commission
Office of the Secretary
9300 East Hampton Drive
Capitol Heights, MD 20743

Re: Letter of Appeal of Funding Commitment Decision Letter Issued October 24,
         2006 and the USAC Administrator's Decision on Appeal dated February 16,
         2007
         Applicant Schenectady City School District
         Form 471 Application No. 519873
         Funding Year 2006 (07/01/06 – 06/30/2007)
         Billed Entity No. 124157
         Funding Request No. 1430560

Dear Sir or Madam:

On October 24, 2006, the Schools and Libraries Division ("SLD") of the Universal Service Administrative Company ("USAC") issued the above-referenced Funding Commitment Decision Letter that funded Applicant Schenectady City School District ("SCSD" or "Applicant") request for universal service support funding for Internal Connections from New England Systems and Software Inc. .("NESS" or "Company"). The basis for the change of category request of FRN 1430560 for Schenectady City School District's funding request was explained in the Funding Commitment Decision Letter as follows:

The category of service was changed from Basic Maintenance to internal connections in accordance with program rules. The dollars requested were reduced to remove the ineligible product (s) / service (s): Support for Blackboard Web Server.

With this letter, New England Systems and Software Inc. and Schenectady City School District hereby appeal the SLD's October 24, 2006 Funding Commitment Decision Letter as well as the Administrator's Decision on Appeal dated February 16, 2007.

The premise for the change of category from Basic Maintenance to Internal Connections as noted on the Funding Commitment Decision letter is incorrect. Schenectady

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City School District originally requested the funding of FRN 1430560 as Basic Maintenance. The change of category of funding was based on the SLD assuming PBX software maintenance was requested as a purchase of Internal Connections and not for the Basic Maintenance of PBX Equipment. PBX software maintenance is, in fact, Basic Maintenance.

During the Program Integrity Assurance (PIA), support for Blackboard web Server was cost allocated and not requested for funding. During Program Integrity Assurance (PIA) the Reviewer stated that the FRN 1430560 would not be funded unless the category of service was changed from Basic Maintenance to Internal Connections. The change of category of funding was based on the SLD assuming the district was purchasing new PBX software licenses. In actuality, the district was purchasing software maintenance on the district PBX, which was totally eligible under program rules.

During PIA, phase of the program the reviewer never stated the consequence or asked for additional information. In addition, the reviewer advised that SCSD would not receive funding if we did not change the category of service to Internal Connections. Basically, the district was given a choice of no funding at all or change the category of service. By following his advice, without further explanation the district now suffers from lack of funding. Per the Bishop Perry Order, to make corrections to ministerial or clerical errors, we feel that Schenectady City School District should be able to change the category of service back to the original request of Basic Maintenance.

By changing the category of service from Basic Maintenance to Internal Connections, Schenectady City School District now uses one (1) year of its ability to request funding of Internal Connections. The Funding Year 2006 – 2007 was only to be used to request funding for one school (Fulton School, Entity 16035234) with an e-rate discount of 90%. Consequently, it appears that all schools with an e-rate discount of 90% received funding for Internal Connections. This is not true as noted in the attached Item 21 attachment FRN 1430560 is only for Basic Maintenance of Internal connections.

Given the reasons stated above, the Parties respectfully request that the FCC expeditiously process this Letter of Appeal and immediately change the category of service to basic maintenance in the funding commitment for Schenectady City School District. The change of category of funding for an administrative error places a particular hardship on a school district such as Schenectady City School District that otherwise could plan and strategically request funding for internal connections so that they to not violate the 2 in 5 rule. Accordingly, your prompt attention to this appeal is appreciated.

Please direct any questions regarding this Letter of Appeal to the following:

Shari Dwyer Phillips
Erate Exchange
President
PO Box 451
Syracuse, New York 13203
315.422.7608 (Tel)
888.283.9332 (Fax)
sld@erateexchange.com

Respectfully submitted,

Dr. Michael San Angelo
Assistant Superintendent for Business
Schenectady City School District
108 Education Drive
Schenectady, NY 12303

Enclosures: Item 21 for FRN 1430560
Data Sheet for Marconi Equipment

cc: Shari Dwyer Phillips (Erate Exchange)
        Brian Hogan (New England Systems and Software Inc.)

Applicant: Schenectady City School District		Attachment:	9
BEN: 124157		Application:	

Service Provider: New England Systems
SPIN: 143-011-509

FRN:

Narrative Description: Network Backbone Upgrade to replace Manufacturer discontinued/end-of-life equipment >5 Years old
Expand Video Decoder CODEC to 2 additional classrooms per building
Add wireless connectivity for 6 classrooms per building.

Item		Description	Unit Price	Extend
80% E-rate Eligible Schools				
Schenectady High School				
		BDF		
8000-0044-0001	2	Vbrick ETHERNETV STB For MPEG 1/2/4	$ 617.83	$ 1,235.66
ES4400-48T	1	ES4400 switch, 48 10/100BaseTX ports plus 2 built-in GBIC sl	$ 4,495.00	$ 4,495.00
SXGB	1	1-port 1000Base-SX Gigabit interface converter (GBIC)	$ 500.00	$ 500.00
SUPP-S-PS	1	Support, 24X7, 4 hr. parts and service	$ 899.00	$ 899.00
SERV-INSTALL	4	Installation and Configuration	$ 125.00	$ 500.00
SUA2200RM2U	1	APC Smart-UPS 2200VA RM 2U	$ 977.39	$ 977.39
AP9619	1	UPS Network Management Card w/ Environmental Monitoring	$ 343.00	$ 343.00
J8133A	6	ProCurve Wireless Access Point 520wl	$ 441.75	$ 2,650.50
J8432A	6	ProCurve Wireless 802.11g Access Point Card 170wl	$ 201.75	$ 1,210.50
U4835E	6	1y 4h 24x7 ProCurve HWSupp	$ 63.67	$ 382.00
SERV-INSTALL	18	Installation and Configuration	$ 125.00	$ 2,250.00
		MDF		
J4819A	1	Procurve Switch 5308xl	$ 2,249.25	$ 2,249.25
J4839A	1	RPS for 5300xl	$ 714.35	$ 714.35
J4907A	1	14 port 10/100/1000 module for 5300xl	$ 1,799.00	$ 1,799.00
J4878A	3	ProCurve Switch xl Mini-GBIC Module	$ 974.25	$ 2,922.75
J4858A	14	ProCurve Gigabit-SX-LC Mini-GBIC	$ 359.25	$ 5,029.50
H2893E	1	1y 4h 24x7 ProCurve HW Support	$ 303.75	$ 303.75
SUA2200RM2U	1	APC Smart-UPS 2200VA RM 2U	$ 977.39	$ 977.39
AP9619	1	UPS Network Management Card w/ Environmental Monitoring	$ 343.00	$ 343.00
		IDF2		
ES4400-24T	1	ES4400 switch, 24 10/100BaseTX ports plus 2 built-in GBIC sl	$ 2,495.00	$ 2,495.00
SXGB	1	1-port 1000Base-SX Gigabit interface converter (GBIC)	$ 500.00	$ 500.00
SUPP-S-PS	1	Support, 24X7, 4 hr. parts and service	$ 499.00	$ 499.00
SERV-INSTALL	4	Installation and Configuration	$ 125.00	$ 500.00
		IDF3		
ES4400-48T	1	ES4400 switch, 48 10/100BaseTX ports plus 2 built-in GBIC sl	$ 4,495.00	$ 4,495.00
SXGB	1	1-port 1000Base-SX Gigabit interface converter (GBIC)	$ 500.00	$ 500.00
SUPP-S-PS	1	Support, 24X7, 4 hr. parts and service	$ 899.00	$ 899.00
SERV-INSTALL	4	Installation and Configuration	$ 125.00	$ 500.00
		IDF4		
ES4400-48T	1	ES4400 switch, 48 10/100BaseTX ports plus 2 built-in GBIC sl	$ 4,495.00	$ 4,495.00
SXGB	1	1-port 1000Base-SX Gigabit interface converter (GBIC)	$ 500.00	$ 500.00
SUPP-S-PS	1	Support, 24X7, 4 hr. parts and service	$ 899.00	$ 899.00
SERV-INSTALL	4	Installation and Configuration	$ 125.00	$ 500.00
		IDF5		
ES4400-48T	1	ES4400 switch, 48 10/100BaseTX ports plus 2 built-in GBIC sl	$ 4,495.00	4,495.00
SXGB	1	1-port 1000Base-SX Gigabit interface converter (GBIC)	$ 500.00	$ 500.00
SUPP-S-PS	1	Support, 24X7, 4 hr. parts and service	$ 899.00	$ 899.00
SERV-INSTALL	4	Installation and Configuration	$ 125.00	$ 500.00
		IDF6		
ES4400-24T	1	ES4400 switch, 24 10/100BaseTX ports plus 2 built-in GBIC sl	$ 2,495.00	$ 2,495.00
SXGB	1	1-port 1000Base-SX Gigabit interface converter (GBIC)	$ 500.00	$ 500.00
SUPP-S-PS	1	Support, 24X7, 4 hr. parts and service	$ 499.00	$ 499.00
SERV-INSTALL	4	Installation and Configuration	$ 125.00	$ 500.00
		IDF7		

ES4400-48T	1	ES4400 switch, 48 10/100BaseTX ports plus 2 built-in GBIC sl	$	4,495.00	$	4,495.00
SXGB	1	1-port 1000Base-SX Gigabit interface converter (GBIC)	$	500.00	$	500.00
SUPP-S-PS	1	Support, 24X7, 4 hr. parts and service	$	899.00	$	899.00
SERV-INSTALL	4	Installation and Configuration	$	125.00	$	500.00
IDF8						
ES4400-48T	1	ES4400 switch, 48 10/100BaseTX ports plus 2 built-in GBIC sl	$	4,495.00	$	4,495.00
SXGB	1	1-port 1000Base-SX Gigabit interface converter (GBIC)	$	500.00	$	500.00
SUPP-S-PS	1	Support, 24X7, 4 hr. parts and service	$	899.00	$	899.00
SERV-INSTALL	4	Installation and Configuration	$	125.00	$	500.00
IDF10						
ES4400-48T	1	ES4400 switch, 48 10/100BaseTX ports plus 2 built-in GBIC sl	$	4,495.00	$	4,495.00
SXGB	1	1-port 1000Base-SX Gigabit interface converter (GBIC)	$	500.00	$	500.00
SUPP-S-PS	1	Support, 24X7, 4 hr. parts and service	$	899.00	$	899.00
SERV-INSTALL	4	Installation and Configuration	$	125.00	$	500.00
IDF11						
ES4400-24T	1	ES4400 switch, 24 10/100BaseTX ports plus 2 built-in GBIC sl	$	2,495.00	$	2,495.00
SXGB	1	1-port 1000Base-SX Gigabit interface converter (GBIC)	$	500.00	$	500.00
SUPP-S-PS	1	Support, 24X7, 4 hr. parts and service	$	499.00	$	499.00
SERV-INSTALL	4	Installation and Configuration	$	125.00	$	500.00
IDF-Pool						
ES4400-24T	1	ES4400 switch, 24 10/100BaseTX ports plus 2 built-in GBIC sl	$	2,495.00	$	2,495.00
SXGB	1	1-port 1000Base-SX Gigabit interface converter (GBIC)	$	500.00	$	500.00
SUPP-S-PS	1	Support, 24X7, 4 hr. parts and service	$	499.00	$	499.00
SERV-INSTALL	4	Installation and Configuration	$	125.00	$	500.00

Oneida Middle

BDF						
8000-0044-0001	2	Vbrick ETHERNETV STB For MPEG 1/2/4	$	617.83	$	1,235.66
J4905A	1	Procurve Switch 3400cl-24G	$	2,706.00	$	2,706.00
J4858A	3	ProCurve Gigabit-SX-LC Mini-GBIC	$	359.25	$	1,077.75
U6304E	1	1y 4h 24x7 ProCurve HWSupp	$	250.00	$	250.00
SUA2200RM2U	1	APC Smart-UPS 2200VA RM 2U	$	977.39	$	977.39
AP9619	1	UPS Network Management Card w/ Environmental Monitoring	$	343.00	$	343.00
J8133A	6	ProCurve Wireless Access Point 520wl	$	441.75	$	2,650.50
J8432A	6	ProCurve Wireless 802.11g Access Point Card 170wl	$	201.75	$	1,210.50
U4835E	6	1y 4h 24x7 ProCurve HWSupp	$	63.67	$	382.00
SERV-INSTALL	18	Installation and Configuration	$	125.00	$	2,250.00
IDF1						
ES4400-48T	1	ES4400 switch, 48 10/100BaseTX ports plus 2 built-in GBIC sl	$	4,495.00	$	4,495.00
SXGB	1	1-port 1000Base-SX Gigabit interface converter (GBIC)	$	500.00	$	500.00
SUPP-S-PS	1	Support, 24X7, 4 hr. parts and service	$	899.00	$	899.00
SERV-INSTALL	4	Installation and Configuration	$	125.00	$	500.00

Central Park Middle

BDF						
8000-0044-0001	2	Vbrick ETHERNETV STB For MPEG 1/2/4	$	617.83	$	1,235.66
J4905A	1	Procurve Switch 3400cl-24G	$	2,706.00	$	2,706.00
J4858A	3	ProCurve Gigabit-SX-LC Mini-GBIC	$	344.88	$	1,034.64
U6304E	1	1y 4h 24x7 ProCurve HWSupp	$	250.00	$	250.00
SUA2200RM2U	1	APC Smart-UPS 2200VA RM 2U	$	977.39	$	977.39
AP9619	1	UPS Network Management Card w/ Environmental Monitoring	$	343.00	$	343.00
J8133A	6	ProCurve Wireless Access Point 520wl	$	441.75	$	2,650.50
J8432A	6	ProCurve Wireless 802.11g Access Point Card 170wl	$	201.75	$	1,210.50
U4835E	6	1y 4h 24x7 ProCurve HWSupp	$	63.67	$	382.00
SERV-INSTALL	18	Installation and Configuration	$	125.00	$	2,250.00
IDF1						
ES4400-48T	1	ES4400 switch, 48 10/100BaseTX ports plus 2 built-in GBIC sl	$	992.88	$	992.88
SXGB	1	1-port 1000Base-SX Gigabit interface converter (GBIC)	$	500.00	$	500.00
SUPP-S-PS	1	Support, 24X7, 4 hr. parts and service	$	198.58	$	198.58
SERV-INSTALL	4	Installation and Configuration	$	125.00	$	500.00
IDF2						
ES4400-48T	1	ES4400 switch, 48 10/100BaseTX ports plus 2 built-in GBIC sl	$	992.88	$	992.88

SXGB	1	1-port 1000Base-SX Gigabit interface converter (GBIC)	$ 500.00	$ 500.00
SUPP-S-PS	1	Support, 24X7, 4 hr. parts and service	$ 198.58	$ 198.58
SERV-INSTALL	4	Installation and Configuration	$ 125.00	$ 500.00

Woodlawn Elementary

BDF

8000-0044-0001	2	Vbrick ETHERNETV STB For MPEG 1/2/4	$ 617.83	$ 1,235.66
J4905A	1	Procurve Switch 3400cl-24G	$ 2,706.00	$ 2,706.00
J4858A	2	ProCurve Gigabit-SX-LC Mini-GBIC	$ 359.25	$ 718.50
U6304E	1	1y 4h 24x7 ProCurve HWSupp	$ 250.00	$ 250.00
SUA2200RM2U	1	APC Smart-UPS 2200VA RM 2U	$ 977.39	$ 977.39
AP9619	1	UPS Network Management Card w/ Environmental Monitoring	$ 343.00	$ 343.00
J8133A	6	ProCurve Wireless Access Point 520wl	$ 441.75	$ 2,650.50
J8432A	6	ProCurve Wireless 802.11g Access Point Card 170wl	$ 201.75	$ 1,210.50
U4835E	6	1y 4h 24x7 ProCurve HWSupp	$ 63.67	$ 382.00
SERV-INSTALL	18	Installation and Configuration	$ 125.00	$ 2,250.00

IDF1

ES4400-48T	1	ES4400 switch, 48 10/100BaseTX ports plus 2 built-in GBIC sl	$ 4,495.00	$ 4,495.00
SXGB	1	1-port 1000Base-SX Gigabit interface converter (GBIC)	$ 500.00	$ 500.00
SUPP-S-PS	1	Support, 24X7, 4 hr. parts and service	$ 899.00	$ 899.00
SERV-INSTALL	4	Installation and Configuration	$ 125.00	$ 500.00

Van Corlear Elementary

BDF

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8000-0044-0001	2	Vbrick ETHERNETV STB For MPEG 1/2/4	$ 617.83	$ 1,235.66
J4905A	1	Procurve Switch 3400cl-24G	$ 2,706.00	$ 2,706.00
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SUPP-S-PS	1	Support, 24X7, 4 hr. parts and service	$ 899.00	$ 899.00
SERV-INSTALL	4	Installation and Configuration	$ 125.00	$ 500.00

Zoller Elementary

BDF

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J4905A	1	Procurve Switch 3400cl-24G	$ 2,706.00	$ 2,706.00
J4858A	2	ProCurve Gigabit-SX-LC Mini-GBIC	$ 359.25	$ 718.50
U6304E	1	1y 4h 24x7 ProCurve HWSupp	$ 250.00	$ 250.00
SUA2200RM2U	1	APC Smart-UPS 2200VA RM 2U	$ 977.39	$ 977.39
AP9619	1	UPS Network Management Card w/ Environmental Monitoring	$ 343.00	$ 343.00
J8133A	6	ProCurve Wireless Access Point 520wl	$ 441.75	$ 2,650.50
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U4835E	6	1y 4h 24x7 ProCurve HWSupp	$ 63.67	$ 382.00
SERV-INSTALL	18	Installation and Configuration	$ 125.00	$ 2,250.00

IDF1

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SXGB	1	1-port 1000Base-SX Gigabit interface converter (GBIC)	$ 500.00	$ 500.00
SUPR-S-PS	1	Support, 24X7, 4 hr. parts and service	$ 899.00	$ 899.00
SERV-INSTALL	4	Installation and Configuration	$ 125.00	$ 500.00

Howe Magnet

BDF

8000-0044-0001	2	Vbrick ETHERNETV STB For MPEG 1/2/4	$ 617.83	$ 1,235.66

J4905A	1	Procurve Switch 3400cl-24G	$ 2,706.00	$	2,706.00
J4858A	2	ProCurve Gigabit-SX-LC Mini-GBIC	$ 359.25	$	718.50
U6304E	1	1y 4h 24x7 ProCurve HWSupp	$ 250.00	$	250.00
SUA2200RM2U	1	APC Smart-UPS 2200VA RM 2U	$ 977.39	$	977.39
AP9619	1	UPS Network Management Card w/ Environmental Monitoring	$ 343.00	$	343.00
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SXGB	1	1-port 1000Base-SX Gigabit interface converter (GBIC)	$ 500.00	$	500.00
SUPP-S-PS	1	Support, 24X7, 4 hr. parts and service	$ 899.00	$	899.00
SERV-INSTALL	4	Installation and Configuration	$ 125.00	$	500.00

Subtotal	197,491.66
80% Erate Discount	157,993.33
Net Amount	39,498.33

Marconi

High-density desktop connectivity

Resilient, scalable Fast Ethernet solution minimizes CapEx and OpEx
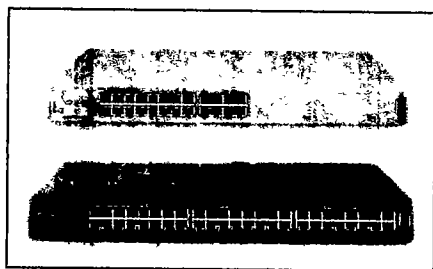
The Marconi ES™4400 series is designed to provide high-density desktop connectivity for mid-size and large enterprise customers' wiring closets.

Stackable 10/100 Mbps ES4400 Ethernet Switches include two built-in GBIC (Gigabit interface converter) uplink ports and built-in stacking ports in a compact one rack-unit-high design. They provide high-density desktop connectivity for mid-size and large enterprise customers' wiring closets.

ES4400 switches' comprehensive Quality of Service (QoS) features are designed to ensure connectivity and network availability by managing and prioritizing data traffic for maximum performance. These switches offer a scalable, resilient solution that minimizes capital and operational expenses. Their robust security features offer protection against unauthorized access to data traffic. Marconi ES4400 switches are available in two models – the ES4400-48T switch and the ES4400-24T switch.

Key benefits
- High-density desktop connectivity up to 384 ports
- Cost-effective plug and play with built-in stacking ports
- Two built-in GBIC uplinks for highest uplink capacity
- Flexible stacking across multiple ES4400 switches – a stack is managed as a single entity with a single IP address
- Simple software upgrades with a single image for different switches
- Resilient connectivity for minimal network downtime
- Fail-safe stacking design assures continuous uptime
- Network availability with QoS features
- Secure access and data traffic protection
- Common look and feel minimizes training and installation costs

High-density, high-speed desktop switching

The Marconi ES4400-48T switch features 48 10/100BASE-TX RJ-45 ports for desktop switching and two built-in GBIC ports for uplink. Port 47 and Port 48 offer configuration flexibility by allowing the network administrator to configure each port as either 10/100BASE-TX or make use of the built-in GBIC. Up to eight ES4400-48T switches can be stacked to achieve up to 384 10/100 ports for high-density desktop switching.

The Marconi ES4400-24T Switch offers 24 10/100BASE-TX RJ-45 ports for desktop switching and two built-in GBIC ports for uplink. All 26 ports may be used simultaneously. Up to eight ES4400-24T and ES4400-48T switches may be combined in a single stack for maximum flexibility.

Two built-in GBIC ports

Marconi ES4400 switches have two built-in GBIC ports for dedicated uplink connectivity to network core switches such as the Marconi EXR™9300. This doubles the uplink bandwidth as GBIC ports are not required for stacking purposes. Using distributed multi-link trunking (DMLT), up to 16 GBIC ports are available for pure uplink connectivity in a full stack -- the highest in the market.

Innovative built-in stacking ports

Marconi ES4400 switches have built-in stacking ports for simpler, quicker, and more cost-effective stacking, as cascade modules are not required. This unique stacking design frees up both of the uplink ports for dedicated connectivity to the backbone.

ES4400-48T Switch Stack

Multi-Gigabit load-balancing and failover protection for uninterrupted access to local servers and the network center

Multi-link Trunking to EX9300 at the network center

EX9300 Switch

Multi-link trunking (MLT)

MLT enables grouping of links between the ES4400 and another switch or server to provide greater bandwidth with active redundant links. With the DMLT feature, trunked ports can span multiple units of the stack for fail-safe connectivity to mission-critical servers and the network center. This can provide greater bandwidth of up to 800 Mbps (when used with 10/100 ports) or up to 8 Gbps (when used with Gigabit uplink ports) with active redundant links in one trunk. Up to six trunks are supported per switch or stack. The ES4400's ability to have multiple connections to an EXR9300 network core using the split multi-link trunking (SMLT) feature of the EXR9300 allows customers to double their network bandwidth with no extra investment. The EXR9300 provides a self-healing network, which delivers the reliability and availability required by today's mission-critical applications. By combining the reliability of the EXR9300 with the resilient trunking features of the ES4400, such as DMLT and MLT, Marconi has created the next generation of flexible networking solutions. For example, an enterprise solution consisting of ES4400 switch stacks in the wiring closets, collapsing in to the network core switch (EXR9300), provides high-density desktop connectivity as well as fault-tolerant connections to core switch and mission-critical servers.

Enhanced security

ES4400 switches offer the highest level of security with features including Secure Shell (SSH), IEEE 802.1x based security (also known as Extensible Authentication Protocol – EAP), Simple Network Management Protocol (SNMPv3), IP Manager's list, MAC address-based security, and Remote Authentication Dial-In User Service (RADIUS) authentication.

SSHv2 supports strong authentication and encrypted communications. It allows a user to log into the switch from an SSH client and perform a secure Telnet session using CLI commands. This feature is ideal for security conscious customers such as federal governments.

For added security, ES4400 switches support the 802.1x-based security feature – EAP. Based on the IEEE 802.1x standard, EAP limits access to the network based on user credentials. A user is required to "login" to the network using a username/password; the user database is maintained on the authentication server (not the switch). EAP prevents network connectivity without password authorization for added security and control in physically non-secure areas. It is used where the network is not 100 percent physically secure or where physical security needs enhancement – for example, banks, trading rooms, or classroom training facilities. EAP supports client access to the network and interoperates with Microsoft Windows XP and other standards-based clients.

SNMPv3 provides user authentication and data encryption for higher security. It also offers secure configuration and monitoring. IP Manager List limits access to the management features of ES4400 switches by a defined list of IP addresses, providing greater network security and manageability.

The ES4400 switches feature MAC-address based security, which allows authentication of all access, not only to the switches for management and configurations but also access to the infrastructure through these switches. This software feature limits access to only network authorized and trusted personnel, including full tracking of network connections.

With MAC-address based security, network access is granted or denied via proper MAC address (up to a maximum of 448) identification. In addition, with the distributed access list security feature, network access is granted or denied on a per-port basis. ES4400 switches also provide RADIUS authentication for switch security management.

Fail-safe stacking

A key differentiator for ES4400 switches is their resilient stacking feature. ES4400 switches can stack up to eight units with a cascade stacking design, assuring continuous uptime even if a single switch in the stack should fail. A loop-back or cascade cable is used to seamlessly connect the entire stack to provide no single point of failure.

Common look and feel

ES4400 and E4500 switches have a common "look and feel" which minimizes training costs. This allows the switches to be managed in a similar fashion via a broad set of management tools. These tools include Web, Java-based device manager (JDM), command line interface (CLI), and Marconi ServiceOn® Data.

MAC addresses

Marconi ES4400 switches support up to 16,000 MAC addresses per switch or stack, for deployment of large-scale, enterprise networks with many attached devices and workgroups, allowing for scalability and cost-effectiveness.

VLAN support

Up to 256 port-based VLANs can be configured per individual switch or per stack to extend the broadcast domain and segment network traffic. The 256 VLANs can be spread among port-based and MAC source address-based VLANs (up to a maximum of 48 MAC source address based VLANs). The 256 VLANs can be on a standalone switch or across a stack.
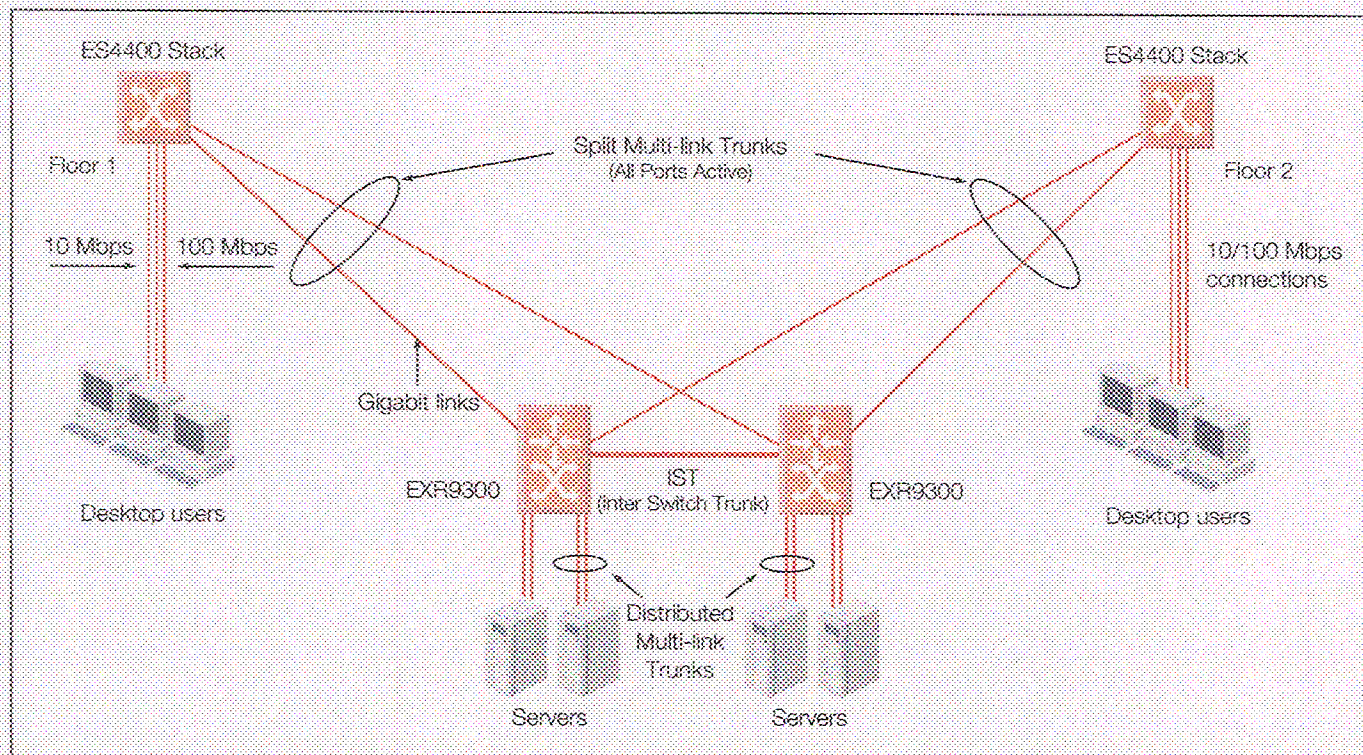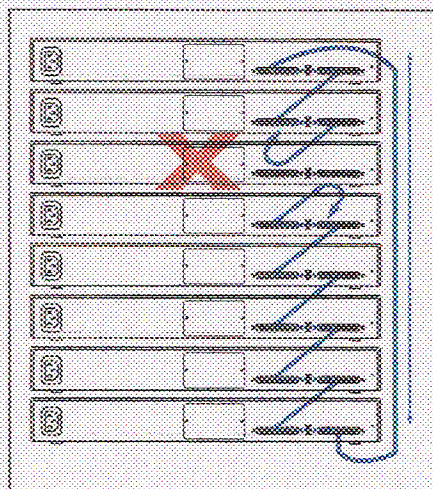
Figure 2. Enterprise solution

Figure 3. In the unlikely event of a switch failure, the stack integrity is maintained; cascade signals loop back at point of failure

Protocol-based VLANs allow switch ports to be assigned to a broadcast domain based on the protocol information within the packet. These VLANs localize broadcast traffic and assure that the specified protocol type packets are sent only to the protocol-based VLAN ports.

Shared VLAN (SVL) and Independent VLAN learning (IVL) is supported. With SVL support, all VLANs in the switch share the same forwarding database. IVL allows individual VLANs to have separate forwarding databases within the switch, and it allows the switch to handle duplicate MAC addresses if the addresses are in different VLANs.

IGMP snooping
ES4400 switches feature IP multicast support by examining ('snooping') all Internet Group Multicast Protocol (IGMP) traffic in hardware at line rate, and pruning unwanted data streams from affecting network or end-station performance.

Multiple Spanning Tree protocol groups
ES4400 switches support multiple spanning tree groups (STGs). They support a maximum of eight STGs, either all in one standalone switch or across a stack consisting solely of ES4400 switches. Multiple STGs provide multiple data paths, which can be used for load balancing and redundancy.

Command line interface
The CLI is used to automate general management and configuration of ES4400 switches. The CLI may be used through a Telnet/Secure Shell session or through the serial port on the console.

ASCII configuration file
ES4400 switches can download a user-editable ASCII configuration file from a Trivial File Transfer Protocol (TFTP) server. The ASCII configuration file can be loaded automatically at boot time or on-demand using the management systems (console menus or CLI). Once downloaded, the configuration file automatically configures the switch or stack according to the CLI commands in the file. This feature allows the flexibility of creating command configuration files that can be used on several switches or stacks with minor modifications.

Auto MDI/MDIX

Marconi ES4400 switches can be connected to a hub or another switch quickly and cost-effectively. Normally, a crossover cable is needed for this purpose, but with the ES4400 switch, an inexpensive straight-through cable or a crossover cable can be used. When a cable is connected to one of the 10/100 ports on the switch, the switch port automatically can detect the energy on the cable and configures itself. This feature makes configuration easier, as it eliminates the need for an MDI/MDIX port; any port may be used for connection to a hub or switch.

Web-based management

Web-based network management makes managing the ES4400 switch stack easy with a Web browser. Summary, configuration, fault, statistics, application, administration, and support pages can be provided for the entire stack. Traffic classification and prioritization can be set via the Web-based QoS wizard and advanced configuration tool. Real-time sampling provides up-to-date LED statistical information for stacked units. The Web interface also allows for static configuration of numerous parameters of the device.

Network management

On-box management

Network management begins with the device. ES4400 switches support four groups of remote monitoring (RMON) on all ports and are SNMPv3 compliant. RMON2 is supported via the port mirroring function using an external RMON2 probe. The SNMP agent software resides in the switch and uses the information it collects to provide management for all ports in the stack, providing comprehensive network monitoring capabilities. In addition, the agent also provides the ability to set up policy-based networks by supporting the Common Open Policy Support (COPS) protocol. The ES4400 is supported by Service On Data.

Configuration management

The process of configuration begins with a single device but finishes across multiple devices. Java device manager (JDM) is the GUI device configuration tool for configuring a single device. It uses a common user interface and workflow that supports ES4400, ES4500, EXR9300 and EXR9100 switches. Furthermore, JDM also supports SNMPv3, allowing network managers to securely manage their network.

Quality of Service

Quality of Service (QoS) is becoming increasingly necessary as more of an organization's critical business runs over the network infrastructure. The ES4400 switch's QoS features allow you to utilize bandwidth more efficiently, optimizing existing network resources and capabilities. If the network is congested or down, if sales people cannot submit orders, if e-mail and intranet traffic threatens on-line Web transactions, or if new applications like voice and video fall, your business could be negatively impacted. By classifying, prioritizing, policing, and marking (DiffServ Code Point) LAN traffic, networks can offer reliable connectivity and required bandwidth for mission-critical applications like IP telephony to specific groups and users, and to individual devices.

For each of these applications, advanced QoS features support Internet Engineering Task Force (IETF) standard DiffServ QoS architecture – a packet classification based on the content of packet header fields (voice, video, data), traffic policing, and remote sniffing. As a result, optimal network performance and reliability may be attained while realizing significant cost savings. Customized service type and flow-based administrations through traffic shaping and policing may also be established, providing an opportunity for customer-specific service offerings, which can be implemented to address specific and unique customer requirements.

Queuing function

Marconi ES4400 switches provide network availability for mission-critical applications, devices, and users. This is done by classifying, prioritizing, and marking LAN IP traffic using up to eight hardware-based IP service class queues (on the Gigabit uplink ports) based on the following parameters:
- ToS/DSCP marking
- IP source address/destination address or subnets
- TCP/UDP source/destination port/port range
- 802.1p priority bits
- Ingress source port
- IP protocol ID (e.g. TCP, UDP, IGMP)
- EtherType (e.g. IP, IPX)
- VLAN ID

The switches have the ability to read packets that have been marked from other devices such as the Marconi EXR9300 switch. The switches support strict priority queuing as well as the weighted round robin method. Weighted round robin prevents normal priority traffic from being starved by expedited traffic (on a per packet basis).

QoS and policy management

QoS provides the ability to read, alter, prioritize, tag, or mark IP traffic based upon information imbedded in the Type of Service (ToS) field. Based on the IETF Committee's industry standards, ES4400 switches provide the ability to prioritize traffic based upon the required level of service for a given transaction. This level of service can be marked in the embedded information inside each IP packet's ToS field. DiffServ is based upon the ToS field.

ES4400 switches have application-specific integrated circuits (ASICs) to enable DiffServ Code points to be mapped to 802.1p. The QoS policies can be configured via the ES4400 switch's built-in Web-based management tools.

Traffic policing

Traffic policing enables provisioning of different levels of service by limiting traffic throughput at the ingress (incoming) port of the ES4400 switch. For example, if a port is set to a certain speed, such as 10 Mbps, all traffic above 10 Mbps will be dropped or re-marked with lower priority in the event of congestion. The bandwidth guarantee can be specified in increments as small as 1 Kbps. Service providers will find this especially useful to control bandwidth to their customers.

IP traffic shaping

IP traffic shaping offers the ability to smooth IP classified traffic from the Gigabit uplink ports of a single ES4400 switch. While traffic policing is needed to provide different levels of service to data streams on the ingress ports, traffic shaping is needed to smooth the traffic on the uplink connection from the ES4400 switch to the network core, yielding the most efficient bandwidth utilization. Service providers or carriers utilize this feature when they are selling Ethernet in place of the traditional Frame Relay, ISDN, or ATM WAN access solutions. Some enterprise customers use traffic shaping as a mechanism to limit bandwidth without having to swap out physical interfaces, leaving them room to grow.

Data summary

Network protocol and standards compatibility

- IEEE 802.3 10BASE-T (ISO/IEC 8802 3, Clause 14)
- IEEE 802.3u 100BASE-TX (ISO/IEC 8802-3, Clause 25)
- IEEE 802.3u Autonegotiation on Twisted Pair (ISO/IEC 8802-3, Clause 28)
- IEEE 802.3x (Flow Control on the Gigabit Uplink port)
- IEEE 802.3z 1000BASE-SX and 1000BASE-LX
- IEEE 802.1d MAC Bridges (ISO/IEC 10038)
- IEEE 802.1p (Prioritizing)
- IEEE 802.1Q (VLAN Tagging)
- IETF DiffServ

RFC support

- RFC 1213 (MIB-II)
- RFC 1493 (Bridge MIB)
- RFC 2863 (Interfaces Group MIB)
- RFC 2665 (Ethernet MIB)
- RFC 2737 (Entity MIBv2)
- RFC 2819 (RMON MIB)
- RFC 1757 (RMON)
- RFC 1271 (RMON)
- RFC 1157 (SNMP)
- RFC 2748 (COPS)
- RFC 2940 (COPS Clients)
- RFC 3084 (COPS Provisioning)
- RFC 2570 (SNMPv3)
- RFC 2571 (SNMP Frameworks)
- RFC 2573 (SNMPv3 Applications)
- RFC 2574 (SNMPv3 USM)
- RFC 2575 (SNMPv3 VACM)
- RFC 2576 (SNMPv3)
- RFC 2572 (SNMP Message Processing)

Performance specifications

Port forwarding/filtering performance for:

10 Mbps	14,880 pps maximum (64-byte packets)
100 Mbps	148,810 pps maximum
1,000 Mbps	1,488,100 pps maximum
Address database size	16,000 entries at line rate (32,000 entries without flooding)
Addressing	48-bit MAC addresses
Frame length	64 to 1,518 bytes (IEEE 802.1Q Untagged);
	64 to 1,522 bytes (IEEE 802.1Q Tagged)
Data rate	10 Mbps Manchester encoded or 100 Mbps
	4MB - 5MB encoded

Interface options

- 10BASE-T/100BASE-TX RJ-45 (8-pin modular) with Auto MDI/MDIX.
- Marconi ES4400 switches support the following GBICs:
  - 1000BASE-SX uses short wavelength 850 nm fiber optic connectors to connect devices over multimode (550 m or 1,805 ft) fiber optic cable.
  - 1000BASE-LX uses long wavelength 1,300 nm fiber optic connectors to connect devices over single mode (5 km or 3.1 mi) or multimode (550 m or 1,805 ft) fiber optic cable.
  - 1000BASE-XD uses single mode fiber to connect devices over distances up to 40 km (31 mi), depending on the quality of the cable.
  - 1000BASE-ZX Uses single mode fiber to connect devices over distances up to 70 km (43 mi), depending on the quality of the cable. The ports on this GBIC operate only in full-duplex mode.

Data summary (continued)

General	
Dimensions	H: 1.72 in. (4.37 cm) W: 17.25 in. (43.82 cm) D: 13.39 in. (35.29 cm)
Electromagnetic emissions summary	
Meets the following standards	USA, FCC CFR47 Part 15, subpart B, Class A; Canada, ICES-003, Class A; Europe, EN55022, CISPR 22, Class A; Australia/New Zealand, AS/NZS 3548, Class A; Japan, VCCI-V-3/02.04, Class A; Taiwan, CNS 13438, Class A; CE
Electromagnetic immunity	Europe, EN55024, CISPR 24
Environmental	
Operating temperature	32°F to 104°F (0°C to 40°C)
Operating humidity	85% maximum relative humidity; noncondensing
Storage temperature	-13°F to 158°F (-25°C to 70°C)
Storage humidity	95% maximum relative humidity, noncondensing
Operating altitude	10,000 ft (3,024 m) maximum above sea level
Storage altitude	40,000 ft (12,096 m) maximum above sea level
Electrical specifications	
Input voltage	100-240 VAC @ 47 to 63 Hz
Input power consumption	90 W maximum
Input current	1.0 A @ 100 VAC, 0.5 A @ 240VAC
Safety agency approvals	USA, UL60950; Canada, CAN/CSA-22.2 No.60950; Europe, EN60950/IEC 60950, CB report with all national deviation; Australia/New Zealand, AS/NZS 60950; Mexico NOM-019
Weight	10.56 lbs (4.8 kg) for -24T; 11 lbs (5.0 kg) for -48T

Ordering information

ES4400 chassis, power and accessories

ES4400-48T	ES4400 stackable switch, 48 10/100BaseTX ports plus 2 built-in GBIC slots and built-in stacking ports, 18 in. stacking cable included; includes North American power cord
ES4400-24T	ES4400 stackable switch, 24 10/100BaseTX ports plus 2 built-in GBIC slots and built-in stacking ports, 18 in. stacking cable included; includes North American power cord

ES4400 options

SXGB	1-port 1000Base-SX Gigabit interface converter (GBIC)
LXGB	1-port 1000Base-LX Gigabit interface converter (GBIC)
XDGB	1-port 1000Base-XD Gigabit interface converter (GBIC) – 50km
ZXGB	1-port 1000Base-ZX Gigabit interface converter (GBIC) – 70km

ES4400 cascade cables

ES4400-SRC-A	ES4400 Cascade return cable (1 m)
ES4400-SSC-B	ES4400 Spare cascade return cable (18")
ES4400-SRC-C	ES4400 Cascade return cable (3 m)

Marconi

Marconi
5000 Marconi Drive
Warrendale PA 15086-7502
USA
Phone: 724-742-4444
Toll free: 1-866-MARCONI (1-866-627-2664)
www.marconi.com

Product information
Phone: 724-742-6466
Toll free: 1-866-MARCONI (1-866-627-2664)
Fax: 724-742-6464
www.marconi.com

USAC
Universal Service Administrative Company

DIOCESE OF SYRACUSE-SOUTHERN REGION SCHOOLS
144 CLINTON STREET
BINGHAMTON, NY 13905

Attention: Shari Dwyer   Phone: (315)   422-7608

Re: Universal Service Administrator's Confirmation of SPIN Change/Correction

The request to change / correct the Service Provider has been granted.

Form 471 Application Number: 478617

The new Service Provider will receive a Funding Commitment Decision Letter (FCDL).
PLEASE NOTE: While this FCDL will contain more detailed information on the FRNs
listed below, it will show the ORIGINAL COMMITMENT amount, rather than the
amount that remains undisbursed for this FRN.

**THIS E-MAIL IS FOR ADVISORY PURPOSES ONLY. REPLIES WILL NOT
BE RECEIVED. IF YOU HAVE QUESTIONS REGARDING THE SUBJECT
OF THIS ADVISORY E-MAIL, PLEASE CALL OUR CLIENT SERVICE
BUREAU AT 1-888-203-8100.**

Funding Request No. (FRN):	1323923
Original Service Provider:	Time Warner Cable - Albany Division
Original SPIN:	143005967
New Service Provider:	Time Warner ResCom of New York, LLC
New SPIN:	143019523
Original Commitment Amount:	$215.76
Disbursement Amount:	$0.00
CAP Remaining:	$215.76
Date of Change:	12/18/2006
A Form 486 has been filed for this FRN:	Yes
This FRN includes Non-Recurring Services:	No

USAC
Universal Service Administrative Company

DIOCESE OF SYRACUSE-WESTERN REGION SCHOOLS
240 EAST ONONDAGA STREET
SYRACUSE, NY 13202

Attention: Shari Dwyer   Phone: (315)   422-7608

Re: Universal Service Administrator's Confirmation of SPIN Change/Correction

The request to change / correct the Service Provider has been granted.

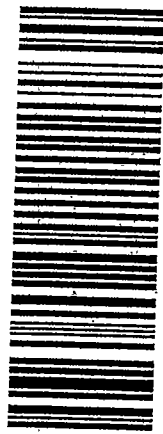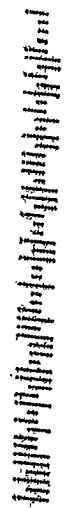Form 471 Application Number: 474624

The new Service Provider will receive a Funding Commitment Decision Letter (FCDL).
PLEASE NOTE: While this FCDL will contain more detailed information on the FRNs
listed below, it will show the ORIGINAL COMMITMENT amount, rather than the
amount that remains undisbursed for this FRN.

THIS E-MAIL IS FOR ADVISORY PURPOSES ONLY. REPLIES WILL NOT BE RECEIVED. IF YOU HAVE QUESTIONS REGARDING THE SUBJECT OF THIS ADVISORY E-MAIL, PLEASE CALL OUR CLIENT SERVICE BUREAU AT 1-888-203-8100.

Funding Request No. (FRN):	1326257
Original Service Provider:	Time Warner Cable - Albany Division
Original SPIN:	143005967
New Service Provider:	Time Warner ResCom of New York, LLC
New SPIN:	143019523
Original Commitment Amount:	$210.37
Disbursement Amount:	$0.00
CAP Remaining:	$210.37
Date of Change:	12/18/2006
A Form 486 has been filed for this FRN:	Yes
This FRN includes Non-Recurring Services:	No

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Federal Communications Commission
Office of the Secretary
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Capitol Heights, MD 20743

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